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CORRESPONDENCE

Comments on "The Unnamed Atlantic Tropical Storms of 1970"

EDWARD W. FERGUSON [1]—*Applications Group, National Environmental Satellite Service, NOAA, Suitland, Md.*

I read Spiegler's (1971) article with special interest as we in the Applications Group of the National Environmental Satellite Service have attempted, for the past several years, to gain a better undertsanding of this type storm. Our interest was stimulated by the fact that the cloud pattern and distribution as observed in satellite data was much the same as that produced by intense hurricanes but on a much smaller scale. The most obvious question was whether surface winds generated by a system of this type were of hurricane force. Our approach to answering this question was to request from the U.S. Coast Guard the name and location of all ships in the vicinity of the storm. This information was then relayed to the Port Meteorological Office in New York City. Walter Stoddard or William Winkert of that office contacted the ships and told them of our interest in the weather conditions that they encountered. The ship's log was either mailed to them or, if the ship docked in New York, they went aboard the ship, copied pertinent weather information from the log, and checked the instruments for exposure and measuring accuracy.

Aug. 18, 1970, was one day on which we exercised this procedure. This was also the last day included in Spieglers' discussion of unnamed storm number 1. The first Applications Technology Satellite (ATS 3) picture of the day, taken at 1311 GMT, located the storm near 40°N and 62°W. Subsequent pictures showed the system to be moving northeastward at about 40 kt until around 1900 GMT when it took on a more northerly track and increased in speed of forward motion.

Two ships are known to have passed near the storm on this day. The *Mosengen* (LKZI) passed close to the center around 1400 GMT (fig. 1) and observed 105-kt north winds for a 15- to 20-min period and a minimum pressure of 988 mb. This pressure, if it is indeed the central pressure, is 13 mb lower than that observed by ship *Hotel* at 0310 GMT. This represents an average deepening of slightly more than 1 mb/hr and agrees with Spiegler's computation of pressure change for the 9-hr period preceding 0300 GMT.

Note in figure 1, that the ship was less than 60 n.mi. from the center of the storm at 1500 GMT, but the surface wind had decreased to 50 kt. This supports Spiegler's conclusion that the strong winds are limited to "a very small area near the center."

[1] Now at the NESS Satellite Field Services Station, Kansas City, Mo.

After the *Mosengen* docked in New York, William Winkert of the National Weather Service Port Meteorological Office went aboard. After examining the equipment, he had this to report:

"(The) anemometer is located on the mast about 30 meters high. The exposure is good and the instrument is an airplane type made by a Japanese firm. (The) barometer is located in the chart room at about 20-meters high. The exposure is good. Record of comparisons: 12/29/69, −1.3 mbs.; 8/20/70, −1.5 mbs."

The *Container Forwarder* (KHVQ) skirted the storm on its north between 1700 and 1800 GMT (fig. 1). The minimum pressure recorded was 996 mb at 1730 GMT. At 1740 GMT, the strongest winds [Beaufort force 9–10 (44 to 52 kt) gusting to force 11 (60 kt)] were encountered. The barograph trace, recorded as the ship approached and passed the storm, is shown in figure 2. Information extracted from the ship's log is presented in table 1. Upon inspection of the vessel's decks and cargo holds the following morning, the ship's chief officer reported that the ship had sustained minor structural damage. The analysis presented here of the last few hours in the life of this storm is similar in many respects to our analyses of other storms of this type. Maximum intensity appears to occur after the storm is caught in the westerlies and moving rapidly to the east or northeast. The storms that deepened most rapidly were located near a cold front, but maintained a separate entity in cloud distribution and wind circulation. This leads one to suspect that a baroclinic zone acts as an energy source to systems of this type. The strongest surface winds are generally in the western semicircle of the storm and confined to within 30–40 n.mi. of the storm center.

The concept that these storms are neither tropical nor extratropical is recognized by the National Weather Service, and in 1972 the National Hurricane Center began issuing subtropical cyclone bulletins that deal with these small but intense storms.

ACKNOWLEDGMENT

I am most grateful to the U.S. Coast Guard for identifying the ships in the vicinity of the storm and to the ship's officers of the *Mosengen* and the *Container Forwarder* for providing the detailed information discussed here. A special thanks is due W. J. Stoddard and W. T. Winkert of the National Weather Service, Port Meteorological Office, New York City, who spent considerable time collecting data and verifying its accuracy.

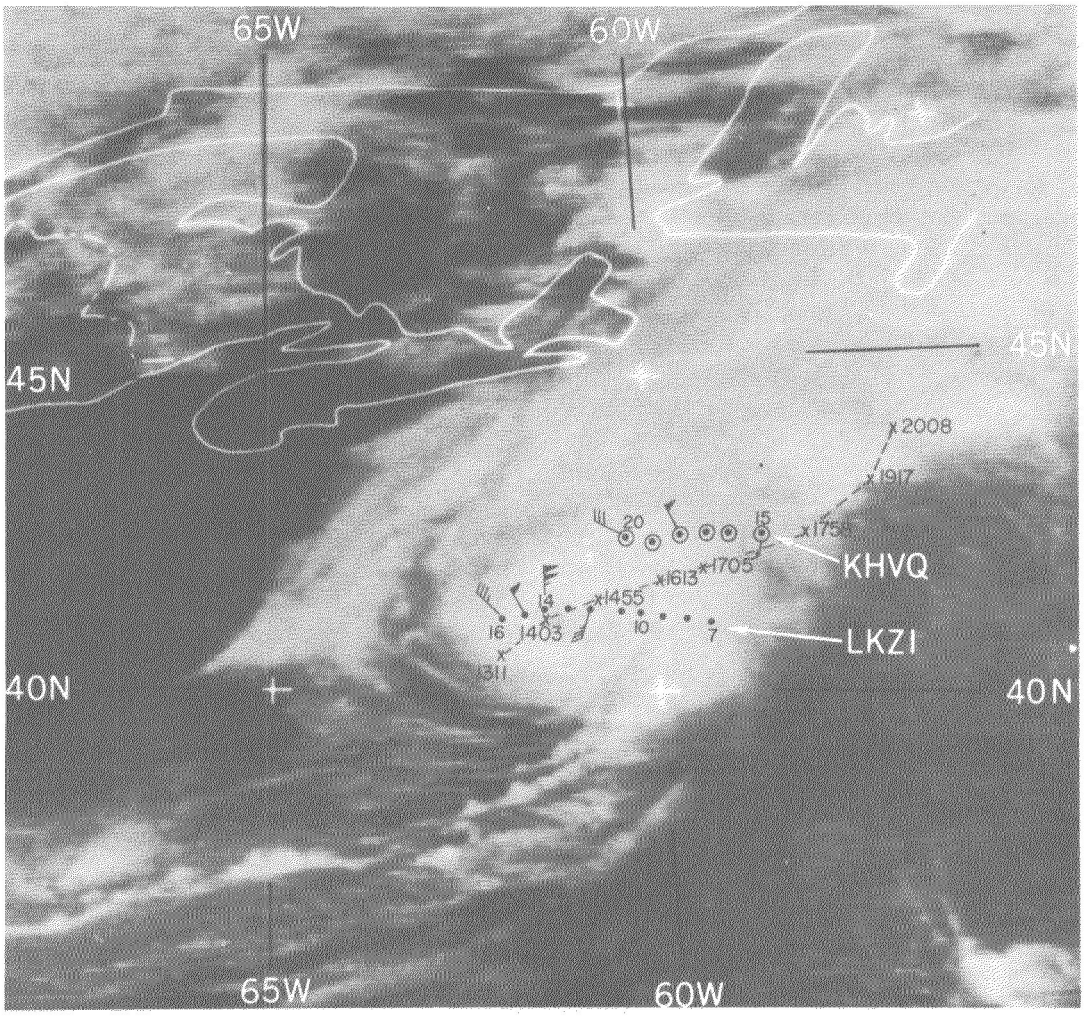

FIGURE 1.—ATS 3 picture at 1403 GMT, Aug. 18, 1970, with the storm track (GMT, x—x) as determined from the ATS 3 picture sequence, the hourly position of the *Mosengen* (GMT, ...), and the hourly position of the *Container Forwarder* (GMT, ⊙ ⊙ ⊙ ⊙).

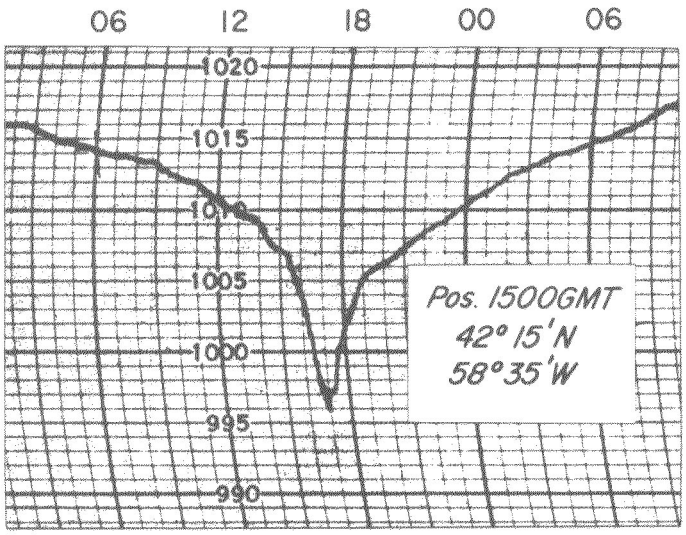

FIGURE 2.—The barograph trace recorded by the *Container Forwarder* from 0200 GMT, Aug. 18 to 1000 GMT, Aug. 19, 1970. (A time correction of +35 min is to be applied.)

TABLE 1.—*Heavy weather abstract of deck log book,* Container Forwarder *Aug. 18, 1970*

Time (GMT)	Remarks
1500	Position 42°15'N. 58°35'W; barometer 29.79 (1008.8mb) and falling; wind SW by S, force 4; sea light southwesterly.
1600	Barometer 29.70 (1005.8mb) and falling; wind and sea conditions increasing.
1700	Barometer 29.55 (1000.7mb) and falling.
1730	Barometer 29.42 (995.6mb); wind N by W, force 7–9 (30–44 kt); sea very rough northwesterly; moderate westerly swell; vessel pitching and rolling moderate; c/c 268° gyro to ease vessel's motion.
1733	Reduced engine speed to 70 RPM to ease vessel's motion and prevent pounding.
1740	Barometer 29.44 (997.0mb). Rising wind—NNW, force 9–10 (44–52 kt) gusting to force 11 (60 kt), heavy rain; sea condition not ascertained due to flying spume, but very rough high to mountainous.
1800	Weather moderating. Increased engine speed to 78 RPM.
1810	Increased to 87 RPM sea speed.
1900	Barometer 29.60 (1002.4mb), rising; wind WNW, force 6–7 (24–30 kt). Sea very rough, but west northwesterly very long heavy confused southerly swell; vessel pitching deeply at times, rolling moderate.

REFERENCE

Spiegler, David B., "The Unnamed Atlantic Tropical Storms of 1970," *Monthly Weather Review*, Vol. 99, No. 12, Dec. **1971**, pp. 966–976.

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